

Innovative RI/FS Approach To A Complex PCB Site

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Region 4**

~~205~~ ~~Dick Green~~
27 → Craig Zeller

I appreciate the effort that went into this paper. The use of GPS in an area where we need improvement. A study on DQO's

The Sangamo Weston, Inc./Twelve Mile Creek/Lake Hartwell PCB Superfund Site (Sangamo) is located on the upper reaches of Lake Hartwell near Pickens, in Pickens County, South Carolina. Sangamo Weston, Inc. owned and operated a capacitor manufacturing plant near the headwaters of Lake Hartwell from 1955 to 1987. These capacitors utilized several kinds of dielectric fluids which contained PCBs. Waste disposal practices from Sangamo's manufacturing processes included land burial of off-specification capacitors and waste water treatment sludges and discharge of wastewater effluent into Town Creek.

will support your other objectives
Thanks
Jim

Town Creek is one of approximately eighty tributaries that flow into Twelve Mile Creek. Twelve Mile Creek, a major tributary to Lake Hartwell, flows over a distance of approximately 24 miles before reaching the Hartwell Reservoir. Lake Hartwell is a man-made reservoir that was constructed by the U.S. Army Corps of Engineers between 1955 and 1963. The lake covers nearly 56,000 acres and has a shoreline of 962 miles. Portions of Twelve Mile Creek's original streambed which indicated the presence of PCB contamination is now inundated by Lake Hartwell.

The RI/FS of Operable Unit Two focused on the downstream impact past waste disposal activities have had on the sediments and aquatic biology of this extensive watershed. The atypical nature of this Superfund Site coupled with its extensive size required the development of an innovative investigation approach. The objective of this Abstract is to delineate these innovative procedures which resulted in significant time and cost savings while ensuring a comprehensive Fund-Lead RI/FS.

A field screening technique, the Modified Spittler Method, was employed for the analysis of sediment core and grab samples. The Modified Spittler Method provides a field screening technique for detecting PCBs at concentrations greater than 1 ppm in soil and sediment samples. While this procedure results in data of DQO* Level III quality (vs. DQO Level IV data from the CLP analysis procedure), it is very rapid and cost-effective. Using commonly available laboratory equipment, one analyst can easily extract and analyze 20 samples per day (vs. a 30-day turnaround time for CLP). The cost of analysis using this screening method is between \$50 and \$100, compared to \$300 for the equivalent CLP analysis. The implementation of the Modified Spittler Method allowed for the collection and analysis of over 1,000 sediment core and grab samples over two phases of the RI/FS. Traditional surveying methods were not appropriate to determine sediment core and grab sample stations with the desired degree of accuracy. Therefore, sample locations were established by using a Global Positioning System (GPS). The GPS is a satellite navigation network consisting of an 18-satellite array. By utilizing two hand-held Magellan GPS units, sample positions were established by latitude and longitude coordinates with an accuracy of +/- 5 meters.



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Cone Penetrometer Application at the Organic Chemical Site To Characterize Oil Contamination

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The Organic Chemical Inc. (OCI) site has been previously used for petroleum refining from 1941 to 1945, and transport and storage operations from 1945 to 1966. Between 1968 and 1980, OCI discharged its process waste and cooling water into the onsite seepage lagoon which included F001-F005 hazardous wastes. In June, 1980 OCI ceased discharge of wastewater to the seepage lagoon. The past operation of the seepage pit, along with past oil-related activities had resulted in significant contamination at the site. These contaminants include high levels of chlorinated solvents, benzene, ethylbenzene, toluene, xylene, and oils. Lower concentrations of other volatile and semi-volatile organic compounds were also detected.

Due to the high levels of oil observed at various depths in the shallow aquifer, it was decided to use an innovative technology developed by the U.S. Army Corps of Engineers, Waterways Experiment Station. The technology includes a cone penetrometer for hydraulically pushing a small diameter probe into the earth, equipped with a laser and fiber optic device, and sensor for soil classification. As a result of this investigation, a graphic color coded three-dimensional plume was developed, clearly showing the extensive oil contamination at the site. The use of this technology has significantly reduced the cost and time of locating monitoring wells to monitor the oil contamination at the site and has dramatically impacted the major oil company associated with the site.

The implementation of these two innovative field techniques allowed for contaminated sediment mapping in the upper reaches of Lake Hartwell using Geostatistical Analysis. This valuable technical support and analysis was provided by EPA's EMSL in Las Vegas and enabled Region 4 to fully determine the nature and extent of PCB- contaminated sediment in Lake Hartwell.

POSTER/DEMONSTRATION SESSIONS